

Improvement of Critical Thinking Skills of Students of Class X Natural Science in Senior High School (MAN 3) Kota Padang Panjang Using Animalia Guided Inquiry Learning Model

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ABSTRACT

The purpose of this study was to determine the improvement of knowledge competencies, attitude competencies and skills competencies of students by using a guided inquiry model. The research subjects were class X MIA MAN 3 Kota Padang Panjang. The data analysis used in this study is qualitative analysis carried out descriptively. The design of this study uses classroom action research. This classroom action research was conducted in 2 cycles, each cycle of which was held 3 times. The results of this study indicate that the average score of knowledge, attitudes and skills of students of class X MIA has increased. The first cycle obtained an average of 77.87%, while in the second cycle there was an increase of 82,49%. Based on the results of the study, it can be concluded that the students' critical thinking skills using guided inquiry models on Animalia material can improve the learning outcomes of students of class X MIA MAN 3 Kota Padang Panjang.

Keywords: *Animalia, Critical thinking, Guided inquiry model.*

1. INTRODUCTION

Education is an effort to develop students in terms of knowledge, attitudes and skills in a social environment in which interaction occurs between students and educators. In this interaction occurs learning behaviors and norms that are able to develop the potential of thinking and acting for students. The learning patterns emphasized today are those that prioritize critical thinking skills. Students' critical thinking skills can be developed through discovery-based learning that is implemented in guided inquiry learning. According to Trianto (2013: 114) inquiry is a core part of contextual based learning activities. Knowledge and skills acquired by students are expected not to be the result of remembering a set of facts but the results of finding it yourself. The teacher must always design activities that refer to discovering activities, regardless of the material being taught.

Learning will be more meaningful if students are given the opportunity to be actively involved in finding facts seen from the environment with the guidance of the teacher. Guided inquiry learning emphasizes that students assume the primary responsibility for building their own knowledge and understanding. The teacher only helps and facilitates the learning process, guides students with questions, investigates behavior and uses observational data to develop explanations and answer their questions.

This inquiry learning involves students directly in learning so that the knowledge obtained is easy to remember, because they find it themselves from what they have not learned, thus increasing their learning achievement. The inquiry model is designed to increase the courage to focus research and to help students develop the discipline of thinking in research freely. This model prioritizes mastery of the research process and awareness of the importance of research (Moejiyono et al, 1991: 118).

The phenomenon that occurs in class X MIA MAN 3 Padang Panjang City in terms of the ability of students to study the subject matter with real life is still low. This is indicated by (1) less critical students. (2) the teacher still uses the demonstration method and lecture method in teaching and learning activities so as to result that students tend to be passive. (3) students have difficulty in understanding the concepts conveyed by the teacher because the involvement of students in learning activities is still low, causing student learning achievement is low. Based on the data obtained by the researcher, can the guided inquiry learning model improve knowledge competency, attitude competency and student competency in learning? The purpose of this study was to determine the increase in knowledge competencies, attitude competencies and student competency skills using the guided inquiry learning model.

2. METHODS

2.1. Think critically

Critical thinking is proportional, reasoned, and directed towards the target. This is the type of thinking involved in problem solving, formulation, conclusions, probability calculations, and making decisions. Critical thinking not only assesses the results of thought processes such as whether a decision has been good or offers a solution to a problem, but also is involved in assessing the actual thought process, thus, critical thinking involves the assessment of thought and the process itself (Nieto et al, 2010: 19). The Delphi report says critical thinking is defined as independent judgment that results in interpretation, analysis, evaluation, and conclusions, as well as an explanation of evolutionary, conceptual, methodological, criteria, or contextual considerations based on six basic elements under the term FRISCO (Focus, Reason, Inference, Situation, Clarity, and Overview).

Critical thinking can also be understood as rational thinking in assessing something (Suhada, 2017: 16) development of critical thinking skills can occur because students face complex problems that can challenge students to apply a number of abilities possessed by students. Critical thinking is also interpreted as reflective and reasonable thinking that is focused on deciding what to believe or do (Lai, 2011: 6). According to Paul and Elder (2007: 6) Critical thinking is the process of analyzing and evaluating thoughts with a view to improving them. Critical thinking presupposes knowledge about the most basic structure in thinking and the most basic intellectual standard for thinking. The key to the creative side of critical thinking is the restructuring of thought as a result of analyzing and assessing effectively. Critical thinking can empower skills or knowledge strategies in setting goals. The process is passed after setting goals, considering and referring directly to the target. Thinking needs to be developed in order to solve problems, form conclusions, gather possibilities and make decisions when using all of these skills effectively in the right context and type.

Indicators of critical thinking are grouped into five aspects as follows:

No	Aspects	Indicator
1	Give simple explanation	a. Focus on questions b. Question analysis c. Question and answer about explanation
2	Building basic skills	a. Consider whether a source can be trusted or not b. Observe and consider induction

3	Dedicate	a. Conclude and consider the results of deduction b. Induce and consider induction c. Make and determine the outcome of consideration
4	Provide further explanation	a. Determine requirements and considerate definitions in three dimensions. b. Identification of assumptions.
5	Establish strategies and tactics	a. Decisive action. b. Interact with other people

Source: (Samsudin et al, 2019)

Critical thinking includes the whole process of obtaining, comparing, analyzing, evaluating, internalizing and acting beyond science and values. Critical thinking is not just logical thinking because critical thinking must have confidence in values, rationale and trust before a logical reason is obtained. Critical thinking in the learning process, depending on the learning model used. One appropriate model for developing critical thinking skills is the guided inquiry learning model.

Inquiry in English, means a question, or examination, investigation. Inquiry as a general process carried out by humans to seek or understand information. Trianto (2013: 166) states that the inquiry strategy means a series of activities that maximally involve all learners' abilities to search and investigate systematically, critically, logically, analytically, so that they can formulate their own findings with confidence. The main objectives of inquiry learning activities are 1) the maximum involvement of students in the learning process 2) the logical and systematic direction of the activity on the learning objectives 3) developing students' confidence about what is found in the inquiry process. The guided inquiry model emphasizes Science Process Skill (SPS), which places students as learning centers (student centered learning), and actively involves students in intellectual activities through experiments, which allows students to practice critical thinking. (Prasasti, 2017: 17).

This research was conducted to reveal whether the use of guided inquiry learning models on animalia material could improve the critical thinking skills of class X MAN 3 students in Padang Panjang City. The framework of thought in this study is explained in the figure below.

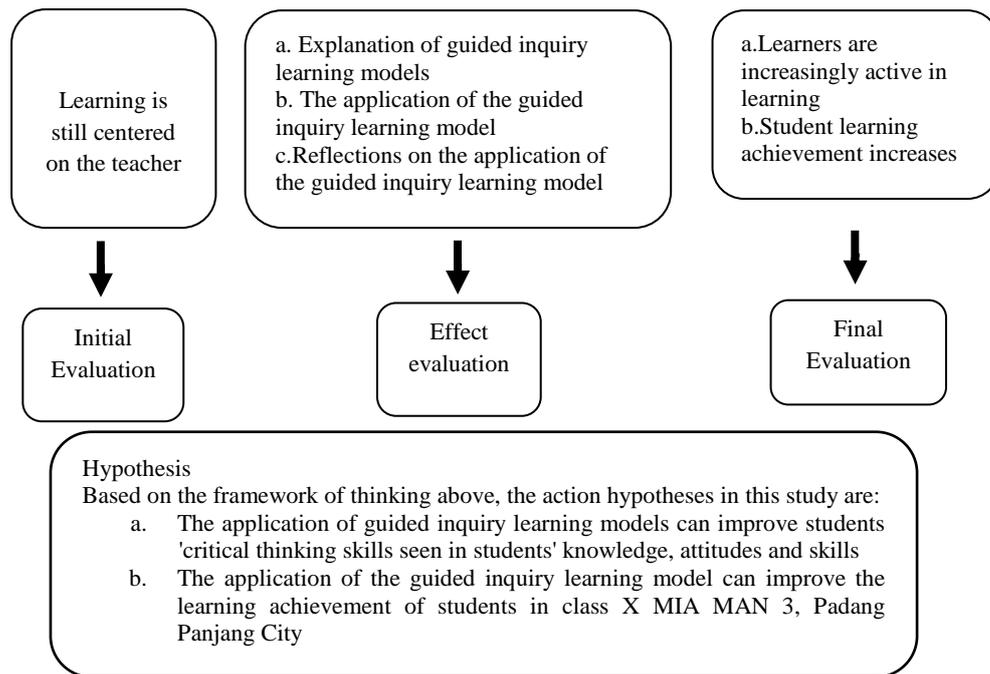


Figure 1. Framework for Thinking (Nggili and Samuel, 2013: 97)

2.2. Research Method

This type of research is classroom action research. According to Lusi and Nggili (2013: 58) Classroom action research is taken from the English "classroom action research" as a method carried out in class. Classroom Action Research is an examination of learning activities in the form of an action, which is deliberately held and occurs in a class together. More broadly, action research is defined as research that is oriented towards the application of actions with the aim of improving quality or problem solving in the group of subjects studied and observing the level of success or consequence of their actions, to then be given further actions that are perfecting actions or adjusting to conditions and situations so that they are obtained better results

This class action research was conducted in class X MIA MAN 3 Kota Padang Panjang on animalia material. The subjects of this study were students of class X MIA MAN 3 Kota Padang Panjang in 2018/2019 school year, Class X MIA consisted of 32 students, with 12 men and 20 women. The value obtained in class X MIA has not reached the minimum completeness criteria (KKM) which is 75, but there are some students who did not experience remedial. The average data of daily test scores can be seen in the following Table 1:

Table 1 Daily Repeat Value

No	Student Score	Number of students	Information
1	87 to 100	2 students	Complete / very good
2	75 to 86	10 students	Complete / Good
3	< 75	20 students	Not complete
Percentage <KKM		62,5%	

The research that will be carried out consists of two cycles. Each cycle in action research consists of four stages: 1) Planning 2) Action 3) Observation, 4) Reflection (Nggili, 2013: 116). The first action taken is planning, at this stage explaining about what, why, when, where, by whom, and how the action was carried out. The second stage is the implementation, this stage is the implementation or application of the design content, which is wearing action in class. The thing to remember is that in this second stage the implementer (teacher) must try to carry out what has been formulated in the design, but it must also apply fairly, not made up. In reflection, the link between implementation and planning needs to be considered carefully so that it synchronizes with the original intent. The third stage is the observation made by the observer. This third stage is carried out simultaneously with stage two. When the implementation took place, the teacher who

was also the observer looked back at the implementation of the learning. While making observations, the implementing teacher records what happened in order to obtain accurate data for improvement of the next cycle. The fourth stage is reflection, at this stage an activity to

restate what has been done. This reflection activity is very appropriate when the implementing teacher has finished taking action, then confronts the observer to discuss the implementation of the action plan.

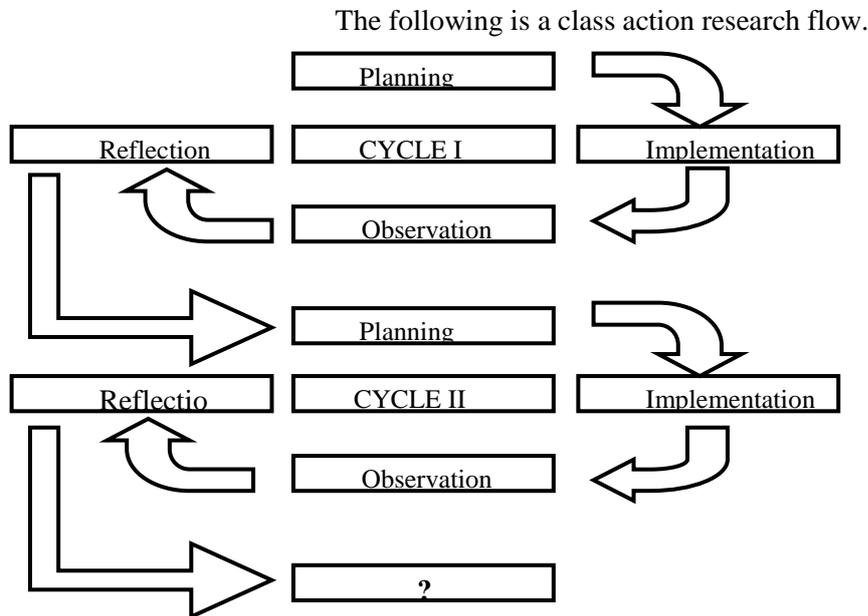


Figure 2 Kurt Lewin's Class Action Research Flow. (Arikunto, 2010: 17)

3. RESULT AND DISCUSSION

3.1. Result

Class action research has been completed the author carried out in 2 cycles, previously preceded by prasiklus on kingdom animalia material. Each cycle ends with the provision of tests for knowledge competency tests, while attitude competencies and skills competencies during the learning process are scored through observations written on the observation sheet. The results of knowledge competency tests and analysis of student observation sheets serve as guidelines in improving the implementation of learning in the next cycle. Pre-cycle learning that has been carried out shows the results of students' learning competencies, as in Table 2.

Table 2. Archive Value of MAN 3 learners in Padang Panjang

No.	Learning competence	Average grade
1.	Knowledge	68,13 %
2.	Attitude	66,65 %
3.	The skills	67.32 %

Based on Table 2 it is known that students' learning competence is still low, seen in the percentage of students completeness not reaching 75%. The competency of the knowledge domain of students is still very low, as evidenced by the results of the pre-cycle final tests, only 12 people who scored above the KKM of 32 students in class X MIA. The highest score obtained by students is 80 and the lowest value is 40. The competency of the attitude domain seen in Table 2 is also still relatively low, as evidenced by observers' observations of the four indicators of attitude competency during the learning process, namely: activeness, collaboration, curiosity and trust self. The four attitudes competency indicators have a percentage of completeness 56.25% of 32 students or 18 people with good categories and the rest 43.75% of students are incomplete with enough categories. Students who are incomplete only play with their friends and are not active in discussions. The skill domain competency in table 2 is also still relatively low. The proof can be seen from the observers' observations of the four indicators of skills competency during the learning process, namely: preparing tools and materials, conducting practicum, concluding observations and presenting the results of practicum. The four indicators of skills competency have a percentage of completeness 59.38% of 32 students or 19

people with good categories and the rest of 40.63% of 32 students are incomplete with enough categories.

Based on the results of students' learning competencies in pre-cycle, it can be concluded that the results of students' learning competencies are still low. So it is necessary to improve the implementation of learning so that it is even better in the implementation of learning the first cycle, using guided inquiry learning. Data processing competency of students' knowledge in cycle I was obtained by holding a written test which was followed by 32 students. The form of the questions is a multiple choice

test with 20 items. This test sheet is used to determine the achievement of students' knowledge competence towards learning that has been learned in cycle I. The average achievement of the domain of knowledge competence of 32 students is 76.47%. Students who did not reach the minimum completeness limit, with a value below 75 as many as 11 people, with a percentage of 34.38%. Students who reach the minimum completeness limit are 21 people with a count of 65.63%.

Table 3. The results of the analysis of attitude competency data in the first cycle.

Aspect Observation	Cycle 1 meeting to--			Average	Criteria
	1	2	3		
Spiritual	71,91	73,72	77,31	74,31	Good
Discipline	72,22	75,00	77,75	74,99	Good
To be responsible	70,75	72,44	78,13	73,77	Good
Confidence	74,69	75,00	81,50	77,06	Good
Average				75,04	Good

Table 4. The results of the analysis of the competency data of the skill domain in the first

Aspect Observation	Cycle II meeting to--			Average	Criteria
	1	2	3		
Spiritual	77,94	79,28	80,84	79,35	Good
Discipline	78,13	79,50	81,63	79,75	Good
To be responsible	77,50	79,00	81,09	79,20	Good
Confidence	81,34	81,91	83,31	82,19	Very Good
Average				80,12	Very Good

Table 5. The analysis of the competency data of the skill domain in cycle II

Observation	Cycle II meeting to--			Average	Criteria
	1	2	3		
Completeness	83,33	83,33	83,33	83,33	Very good
Suitability	78,28	78,65	84,38	80,43	Very good
Neatness	83,91	84,69	89,61	86,07	Very good
Punctuality	81,95	83,40	88,63	83,28	Very good
Average				83,28	Very good

Table 6. The comparison of results achieved

No.	Cycle	evaluation results	Complete%	Incomplete%
1	Pre-cycle	62,50	37,50	62,50
2	Cycle I	78,91	65,63	34,38
3	Cycle II	84,06	87,50	12,50

Based on the data in the table above, there is an increase in the competency of students' learning outcomes from the first cycle to the second cycle, with KKM 75.

Table 7. Analysis of increasing competency of the students' attitudes from pre-cycle, cycle I to cycle II

No.	Observation Indicator	Average Percentage for each Cycle		
		Pre cycle	Cycle I	Cycle II
1	Spiritual	67,35	74,31	79,35
2	Discipline	66,05	74,99	79,75
3	To be responsible	65,63	73,77	79,20
4	Confidence	67,59	77,06	82,19
	Average	66,65	75,03	80,12

Table 8. Analysis of students' competency improvement skills from pre-cycle, cycle I to cycle II

No.	Observation Indicator	Average Percentage for each Cycle		
		Pre cycle	Cycle I	Cycle II
1	Completeness	68,75	83,33	83,33
2	Suitability	64,27	75,97	80,43
3	Neatness	68,25	79,35	86,07
4	Punctuality	68,81	80,08	83,28
	Average	67,32	79,68	83,28
	Category	Enough	Good	Very Good

3.2. Discussion

The improvement of knowledge competency results, attitude competency and student competency skills from pre-cycle, cycle I to cycle II has increased due to several things:

a. Learners are used to using the guided inquiry learning model.

b. Students who carry out the practice can directly find the results of the practice that they do during the learning process. Make it easy to absorb learning materials well

c. Learners can understand learning well because it is closely related to daily life.

The improvement of students' competence is due to the implementation of guided inquiry learning model that gives students the opportunity to develop their abilities in learning.

learning model can improve knowledge competency, attitude competency and skills competency in learning biology class X MIA MAN 3 Kota Padang Panjang in the 2018/2019 academic year.

4. CONCLUSION

Based on the results of classroom action research conducted by the author with the application of guided inquiry learning to improve the critical thinking skills of class X MIA MAN 3 students in Padang Panjang, animalia material. It can be concluded that the guided inquiry

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